USABLE PROGRAMMING TOOLS FOR EXPERIMENTAL BIOLOGISTS

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HANDS-ON PROTOCOLS

CODE, MATH
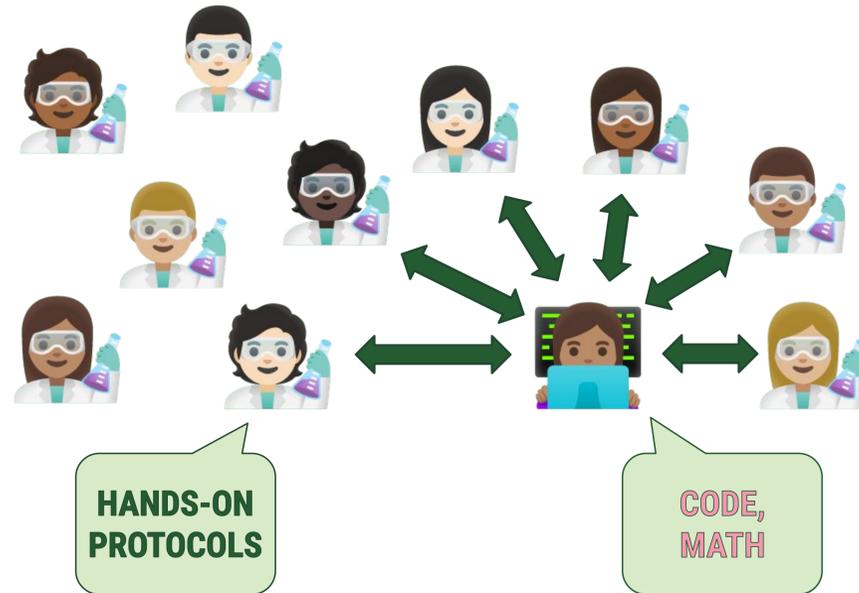
PROJECT 1: COMPONENT-BASED REFACTORING

Collaborators: *Jeremy Ferguson, Kevin Ye, Jacob Yim*

A**CG**CGTGCAG**CG**A**CG**TAGATCAG

2 2 1 1 0 0 0 1 1 1 2 1 1 1 0 0 0 0 0

```
sum(mul(x, y))
```
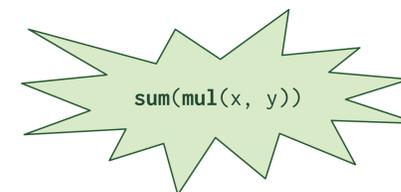
```
def dot(x, y):
    total = 0
    for i in range(len(x)):
        total += x[i] * y[i]
    return total
```

```
total = 0
for i in range(len(mul(x, y))):
    total += mul(x, y)[i]
return total
```

preserves behavior

```
def dot(x, y):
    total = 0
    for i in range(len(x)):
        total += x[i] * y[i]
    return total
```

```
sum(mul(x, y))
```
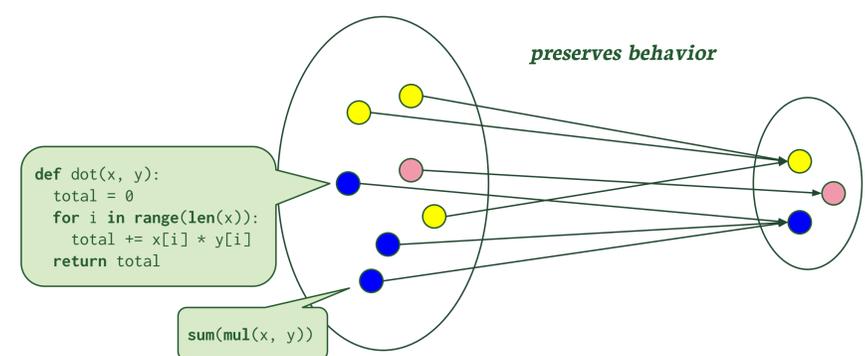
PROJECT 2: WET LAB LANGUAGE

HANDS-ON PROTOCOLS → WET LAB DSL

```
...ACGATAGACAGATAGACG
CGTAACACGCGAACCATTC
GATTGACGCTTTTTTTTT...
```

```
...0001001010100010100101
010101001001011110010101
0110100101010101010100...
```